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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/814,789	04/01/2004	Hyun-soo Park	1793.1150	4971
49455 7590 07/31/2008 STEIN, MCEWEN & BUI, LLP 1400 EYE STREET, NW SUITE 300 WASHINGTON, DC 20005				
EXAMINER BAYARD, EMMANUEL				
ART UNIT 2611		PAPER NUMBER		
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/814,789

**Applicant(s)**

PARK ET AL.

**Examiner**

Emmanuel Bayard

**Art Unit**

2611

**Period for Reply** -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 27 May 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1, 2, 4-17 and 20-22 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-2, 4-17 and 20-22 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/S508)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

### **DETAILED ACTION**

This is in response to RCE filed on 5/27/08 in which claims 1-2, 5-17 and 20-22 are pending.

#### ***Claim Rejections - 35 USC § 112***

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:  

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
2. Claims 1-2 and 4-17 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
3. Claim 1 recites the limitation "the digital signal" in line 8. There is insufficient antecedent basis for this limitation in the claim.
4. Claims 2 and 4-17 are also rejected because they depend on a base rejected claim.

#### ***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:  

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.
6. Claims 1-2, 16-17 and 20-22, are rejected under 35 U.S.C. 103(a) as being unpatentable over Kobayashi U.S. patent No 5,517,481 in view of Yumabi: takashi et al U.S. Patent no 5,144,686.

7. As per claims 1 and 20 Kobayashi teaches an apparatus detecting binary data from an input signal read from an optical recording medium (see abstract and fig.8 element 1), the apparatus comprising: a first signal processor arranged to nonlinearly convert the input signal (see fig.1 and 18 elements 12) generate a nonlinearly converted signal; and a second signal processor detecting circuit (see fig.1 element 13) a second signal processor detecting circuit detecting binary data from the nonlinearly converted signal.

8. However Kobayashi does not teach to nonlinearly convert the input signal based on a result of comparing an absolute value of the input signal and a predetermined critical value.

Yumabi: takashi et al teaches based on a result of comparing an absolute value of the input signal and a predetermined critical value (see fig.2 element 7 and col.4, lines 45-63 and col.7, lines 65-67 and col.8, lines 65-67 and col.10, lines30-40) .

It would have been obvious to one of ordinary skill in the art to implement the teaching of Yumabi: Takashi et al into Kobayashi as to achieve a stable contour line enhancement even when noise would be present in the picture signal as taught by Yumabi (see abstract).

As per claim 2 Yumabi: takashi et al and Kobayashi in combination would teach wherein the first signal processor saturates the input signal by the predetermined critical value when the absolute value of the input signal is larger than the predetermined critical value and outputs the input signal as the nonlinearly converted signal when the absolute value of the input signal is

smaller than the predetermined critical value as to achieve a stable contour line enhancement even when noise would be present in the picture signal as taught by Yumabi (see abstract and col.4, lines 45-63 and col.7, lines 65-67 and col.8, lines 65-67 and col.10, lines30-40).

As per claim 16, Yumabi: takashi et al and Kobayashi in combination would teach wherein the second signal processor is a viterbi decoder and the viterbi decoder uses one of three methods, that is a PR (a,b,a) method, a PR (a,b,b,a,) method, and a PR (a,b,c,b,a) method as to achieve a stable contour line enhancement even when noise would be present in the picture signal as taught by Yumabi (see abstract and col.4, lines 45-63 and col.7, lines 65-67 and col.8, lines 65-67 and col.10, lines30-40).

As per claim 17, Yumabi: takashi et al and Kobayashi in combination would teach, wherein the viterbi decoder uses an equalizer that adjusts the frequency characteristics of the input signal as to achieve a stable contour line enhancement even when noise would be present in the picture signal as taught by Yumabi (see abstract and col.4, lines 45-63 and col.7, lines 65-67 and col.8, lines 65-67 and col.10, lines30-40).

As per claim 21, Yumabi: takashi et al and Kobayashi in combination would teach wherein the converting the digital signal nonlinearly is executed via a digital filter (see fig.8 element 12 of Kobayashi :Note that equalizer is well known in the art as digital filter) having a nonlinear function according to the following equation:  $y = xx\{ |x| \sim k \} + k(-1)^{|x| \sim k} x\{ |x| \sim k \}$  wherein  $|x|$  indicates an absolute value, the braces and their contents become one if a conditional expression contained

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therein is true and zero if a conditional expression contained therein is false,  $x$  is the input signal, and  $k$  is a predetermined value ranging from zero to a positive real number as to achieve a stable contour line enhancement even when noise would be present in the picture signal as taught by Yumabi (see abstract and col.4, lines 45-63 and col.7, lines 65-67 and col.8, lines 65-67 and col.10, lines 30-40).

As per claim 22, Yumabi: takashi et al and Kobayashi in combination would teach wherein the converting the input signal nonlinearly is executed via a digital filter (see fig.8 element 12 of Kobayashi :Note that equalizer is well known in the art as digital filter) having a nonlinear function according to the following equation:  $y = x \{ |x| \sim k \} + k \{ (-1)^{\text{fix}(|x| > k)} \} x \{ |x| \sim k \}$  wherein  $|x|$  indicates the absolute value, the braces and their contents become one if the conditional expression contained therein is true and zero if the conditional expression contained therein is false,  $x$  is the input signal, and  $k$  is the predetermined critical value ranging from zero to a positive real number as to achieve a stable contour line enhancement even when noise would be present in the picture signal as taught by Yumabi (see abstract and col.4, lines 45-63 and col.7, lines 65-67 and col.8, lines 65-67 and col.10, lines 30-40).

### ***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to

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be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 4-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kobayashi U.S. patent No 5,517,481 in view of Yumabi: Takashi et al U.S. Patent no 5,144,686 and in further view of Raz U.S. Patent no 6,639,537.

As per claims 4-6, Yumabi: takashi et al and Kobayashi in combination teach all the features of the claimed invention that yields the result of the following equation:  $y = xx\{|x| \leq k\}$  wherein  $|x|$  indicates an absolute value, the braces and their contents become one if a conditional expression contained therein is true and zero if a conditional expression contained therein is false,  $x$  is the input signal, and  $k$  is a predetermined value ranging from zero to a positive real number (see page 2 [0031-0032] and page 3 [0033]) except wherein the first signal processor includes a digital filter.

Raz teaches a first processor having a digital filter (see figs.4-5 element 116 and col.2, lines 30-55 and col.4, lines 50-67).

It would have been obvious to one of ordinary skill in the art to implement the teaching of Raz into Yumabi: Takashi et al and Kobayashi as to remove the non-linear distortions created by the analog front end as well as, those created by the ADC as taught by Raz (see col.2, lines 30-35)

As per claims 7-15, Raz teaches wherein the first signal processor comprises a finite impulse response (FIR) filter in front of the digital filter, (see figs.4-5 element 116 and col.2, lines 30-55 and col.5, lines 63-67) arranged to change frequency characteristics of the input signal. Furthermore implementing

such teaching; and a nonlinear filter arranged to generate the nonlinearly converted signal based on the absolute value of the input signal and the predetermined critical value of into Yumabi: takashi et al and Kobayashi would have been obvious to one skilled in the art as to remove the non-linear distortions created by the analog front end as well as, those created by the ADC as taught by Raz (see col.2, lines 30-35).

### ***Conclusion***

3. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.
4. Kim U.S. Patent no 6,292,816 B1.
5. Koibe U.S. Paten No 5,784,304.
6. LU U.S. Pub No 2004/0165622.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Emmanuel Bayard whose telephone number is 571 272 3016. The examiner can normally be reached on Monday-Friday (7:Am-4:30PM) Alternate Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chieh Fan can be reached on 571 272 3042. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

7/24/2008

Emmanuel Bayard  
Primary Examiner  
Art Unit 2611

/Emmanuel Bayard/  
Primary Examiner, Art Unit 2611